

Space Mission Training and Development

SSTL provides world-class training opportunities, from academic courses to hands-on complete design and construction training. We provide the capability for larger and smaller organisations to successfully carry out significant space missions even within limited budgets, as well as offering customised short courses to meet specific needs.

We offer a range of training courses in space engineering and the opportunity to gain post-graduate qualifications through the University of Surrey. All of our training and development programmes are tailor-made to provide stand-alone training in specific skills to meet our large and smaller customers' defined objectives.



Mission lifetime	Period	Team	Mission
USA, NASA / MSU	(2007-2008)	3	Magnolia
Nigeria, NASRDA	(2006-2008)	25	NigeriaSat-2
Nigeria, NASRDA	(2001-2003)	12	NigeriaSat-1
Turkey, Bilten	(2001-2003)	12	BILSAT-1
Algeria, CNTS	(2000-2002)	12	AISAT-1
China, Tsinghua Uni.	(1998-1999)	12	Tsinghua-1
Malaysia, ATSB	(1996-1998)	9	TiungSat-1
Singapore, NTU	(1995-1997)	2	UoSAT-12 payload
Thailand, MU	(1995-1997)	12	Thai-Phutt
Chile, FACH	(1994-1998)	8	FASat-A&B
Japan, Fujitsu	(1992-1994)	3	(FjSAT)
Portugal (INETI)	(1992-1994)	6	PoSAT-1
S.Korea, KAIST	(1989-1993)	12	KITSAT
S.Africa	(1989-1992)	2	UoSAT 3/4/5
Pakistan, Suparco	(1984-1988)	10	BADR-1

Key Benefits

- Build a team of space experts
- Develop industrial capability
- Acquire hands-on mission experience
- Gain independent space capability
- Establish space mission capability
- Potential to license space technology

Our Approach

SSTL provides a real and interactive engineering environment in its state-of-the-art-facilities. By providing our students with the depth of knowledge and methodology to complete complex space missions, our trainees are empowered to develop their own solutions.

As SSTL owns the majority of the spacecraft technology designs, training programmes can include licencing. This offers an efficient way to take the first steps in developing a robust space programme and reliable technical foundation.

Track Record and Results

We have more than 25 years experience in delivering training programmes to space nations across the world.

- 15 international programmes delivered
- 6 space agencies formed
- 6 organisations priming their own space missions
- 10 organisations procuring large space systems
- 2 spin-out companies



Training resources – our facilities, technology and people



Tycho House



Kepler Building

Facilities

Trainees will be based at our administrative and manufacturing complex in Guildford.

Tycho House

Our headquarters, in landscaped grounds on the Surrey Research Park, offers flexible facilities for classroom training and review sessions.

The Kepler Building

Out of the classroom, trainees will work in our 3,700sqm (40,000 sqft) technical facility opposite Tycho House. It provides extensive facilities including a vast AIT hall, manufacturing clean rooms, test laboratories and ground station.

Rayleigh House

SSTL's optical payloads manufacturing facility in Sevenoaks, Kent with a suite of clean rooms and dark rooms.

Composites Facility, Bordon, Hampshire

Our dedicated composites facility manufactures components and structures using state-of-the-art equipment.



Training by world class engineers

Trainees are assigned dedicated SSTL engineers who they will shadow for the duration of their project. We also offer customised short courses at SSTL's or customers' premises.



Developing a team of space technology experts

SSTL's training programmes cover the crucial elements of spacecraft engineering from start to finish - from classroom theory to practical hands-on experience and academic training.

Our training programmes consist of three main elements:

Theoretical and introductory courses

- University of Surrey short course on satellite design and construction
- Technology lectures covering the design process, subsystems and modules
- Mission design
- Ground segment, spacecraft and mission operations
- Remote sensing and image processing
- Quality assurance and discrepancy reporting
- Laboratory and clean room procedures
- Laboratory techniques
- Assembly, Integration & Test (AIT) techniques
- Soldering courses to ESA standard



On the job training

- Mission and subsystem design
- Manufacturing and unit test
- AIT and Environmental Verification Testing (EVT)
- Ground segment and operations
- Mission planning and image processing
- Launch campaign
- Commissioning and early orbital operations
- Advanced training - building a complete training model



Academic training

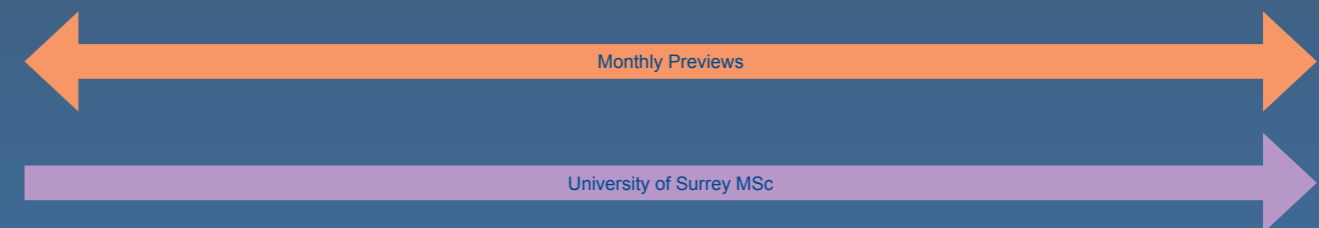
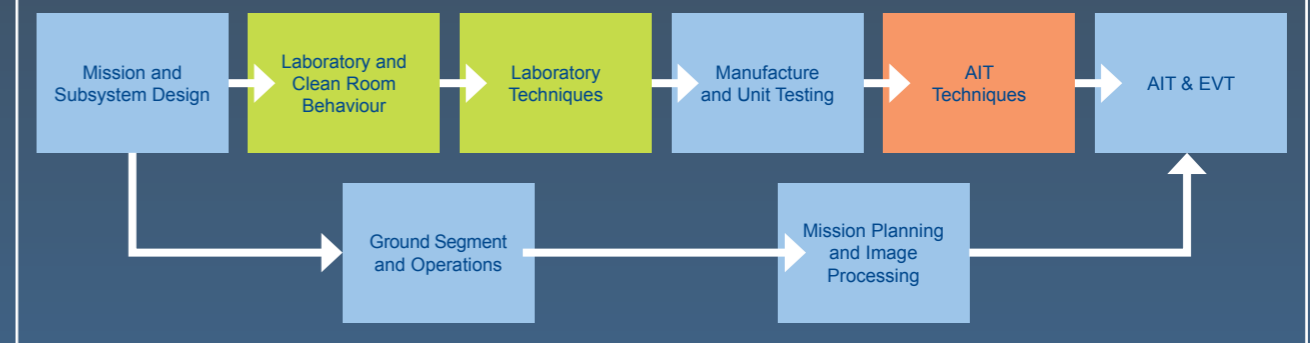
Through our links with the University of Surrey, SSTL training packages can include postgraduate MSc or PhD courses.

A typical Training Programme

Phase 1 - 1 month



Phase 2 - 18-24 months



Evaluation and Qualification

SSTL operates a demanding process of performance evaluation to ensure full understanding and appropriate levels of achievement to meet customer objectives. On satisfactory completion of their training, each trainee will receive an SSTL Training Programme Certificate, an achievement respected by industry world wide.

Trainees undertaking post-graduate courses through the University of Surrey will graduate with a UK academic qualification.



Course Information

- Dates available on request
- Duration dependent on type of mission and number of trainees
- Courses available for Earth Observation and Communications
- UK-based training (some courses can be given outside the UK)
- Typically between 10 - 25 trainees



Developing reliable spacecraft technology can be costly and time consuming. Our training and development programmes provide a rapid and reliable way to achieve national capability.

SSTL knows how to work with students and trainees. We typically have 10 post-graduate placement students working at SSTL at any one time. Our modular approach allows us to design training programmes specifically to meet our customers' defined objectives.

Our programmes are targeted at

- Customers' capacity building programmes
- Larger and smaller organisations wanting to:
 - rapidly use satellite mission technology
 - understand low cost satellite technology practices
 - acquire validated technology
- Established space agencies
- New national space agencies
- Establishment of core space mission project team



“These are exciting times for the Nigerian space programme. The NigeriaSat-2 programme represents another step in the very successful relationship between SSTL and NASRDA. By participating in SSTL’s training programme, our engineers have expanded their skills and knowledge and are developing Nigerian capability in space”

Francis Chizea, Director of Nigeria’s National Space Research & Development Agency (NASRDA) and Project Director for NigeriaSat-2



Programme Features

- Customised programmes of 1-3 years
- Phase 1 foundation course
- Post-graduate degrees in Spacecraft Engineering
- On the job training alongside world class engineers
- Capability to build under licence
- Customised short courses



Surrey Space Centre (SCC)

- Centre of Excellence in space system engineering and technology research and space education
- Training the next generation of space engineers, scientists, entrepreneurs and business leaders
- 70+ PhD students; 30 undergraduate/postgraduate students studying space
- Academic research laboratories covering all disciplines of satellite technology

Areas of Research Degrees (PhDs)

- Remote Sensing Applications
- Space Electronics, Embedded Systems, VLSI & MEMS
- Radiation Environment & Effects
- Data Handling & Communications
- Space Vehicle Attitude & Orbit Control Systems
- Astrodynamics & Propulsion
- Signal Processing, Navigation & GPS Reflectometry
- RF Systems, Antennas & Radar (SAR)
- Planetary Environments, Science & EO Instrumentation
- Space Robotics, Rovers, In-Orbit Servicing
- Autonomy, Artificial Intelligence & Biomimetics
- Nano-Satellites, Pico-Satellites & Aerobots

Teaching

- Satellite Engineering (MSc)
- Short Courses for Industry, Technical Training, Outreach
- Space Technology & Planetary Exploration (BEng/MEng)
- Space Technology & Planetary Exploration (MSc)



World-class Space Research

- Surrey’s pioneering small satellite activities at the University led to the formation of SSTL.
- The Surrey Space Centre is the world’s leading research centre for small satellite technologies.
- SSC through SSTL is able to access in-orbit research opportunities and explore new research ideas.
- SSC provides focused space engineering education, postgraduate and industrial short courses.
- SSC has a large body of PhD, academic and industrial research, with a direct route through SSTL for rapid commercialisation.





SSTL offers world class expertise in small satellite technology with more than 25 years experience and over 30 satellites launched.

15 international training and development programmes delivered.

Applications Innovation Value



Surrey Satellite Technology Ltd,
Tycho House, 20 Stephenson Road, Surrey Research Park, Guildford, GU2 7YE

Tel: +44 (0)1483 803803 | **Fax:** +44 (0)1483 803804 | **Email:** info@sstl.co.uk | **www:** www.sstl.co.uk